What Is Claimed Is:

1. A method for the manufacture of a piezoelectric element, comprising:

a step of forming a diaphragm on a substrate;

a step of forming a bottom electrode on said diaphragm;

a step of forming a first piezoelectric layer constituting a part of a piezoelectric film on said bottom electrode;

a step of patterning said first piezoelectric layer and said bottom electrode to a prescribed shape;

a step of forming a second piezoelectric layer constituting another part of the piezoelectric film on said first piezoelectric layer that was left by said patterning and said diaphragm from which said first piezoelectric layer was removed; and

a step of forming a top electrode on said piezoelectric film.

2. The method for the manufacture of a piezoelectric element according to claim 1,

wherein the thickness of said first piezoelectric layer is less than the thickness of said second piezoelectric layer.

3. The method for the manufacture of a piezoelectric element according to claim 1, additionally comprising a step of forming a Ti layer after said step of patterning and prior to said step of forming a second piezoelectric layer,

wherein said Ti layer has a thickness of no less than 1 nm and no more than 4 nm.

4. A method for the manufacture of a piezoelectric element, comprising:

a step of forming a diaphragm on a substrate;

a step of forming a bottom electrode on said diaphragm;

a step of forming a first Ti layer on said bottom electrode;

a step of patterning said bottom electrode to the prescribed shape;

a step of forming a second Ti layer on the bottom electrode that was left by said patterning and said diaphragm from which the bottom electrode was removed;

a step of forming a piezoelectric film on the bottom electrode on which said second Ti layer was formed; and

a step of forming a top electrode on said piezoelectric film.

5. The method for the manufacture of a piezoelectric element according to claim 4,

wherein the thickness of said first Ti layer formed by said step of forming a first Ti layer is greater than the thickness of said second Ti layer formed in said step of forming a second Ti layer.

6. The method for the manufacture of a piezoelectric element according to claim 4,

wherein the sum of the thickness of said first and second Ti layers formed in said steps of forming Ti layers is no less than 3 nm and no more than 20 nm.

7. A method for the manufacture of an ink-jet recording head comprising a piezoelectric element obtained by a method described in claim 1 or 4, comprising the steps of:

etching said substrate and forming pressure chambers; and

forming a nozzle plate covering said pressure chambers.

8. A piezoelectric element in which a diaphragm, a bottom electrode, a piezoelectric film, and a top electrode are successively stacked on a substrate,

wherein said bottom electrode is patterned to a prescribed shape,

wherein said piezoelectric film is formed on the bottom electrode that was left by the patterning and the diaphragm from which the bottom electrode was removed, and

wherein a portion of said piezoelectric film, which was formed on the bottom electrode that was left by said patterning has a larger number of layers

than the portion formed on said diaphragm from which the bottom electrode was removed.

9. A piezoelectric element in which a diaphragm, a bottom electrode, a piezoelectric film, and a top electrode are successively stacked on a substrate,

wherein said bottom electrode is patterned to a prescribed shape,

wherein said piezoelectric film is formed on the bottom electrode that was left by the patterning and the diaphragm from which the bottom electrode was removed, and

wherein said bottom electrode has a uniform thickness.

10. The piezoelectric element according to claim 8 or 9, wherein, in the portion of said piezoelectric film that was formed on the bottom electrode, the layers have a continuous crystal structure.

11. A piezoelectric element in which a diaphragm, a bottom electrode, a piezoelectric film, and a top electrode are successively stacked on a substrate,

wherein said bottom electrode is patterned to a prescribed shape,

wherein said piezoelectric film is formed on the bottom electrode that was left by the patterning and the diaphragm from which the bottom electrode was removed, and

wherein a portion of said piezoelectric film, which was formed on said diaphragm, has a prescribed orientation.

12. The piezoelectric element according to claim 11,

wherein a portion of said piezoelectric film, which was formed on said diaphragm from which said bottom electrode was removed, has a large orientation in a 100 plane or a 111 plane.

13. The piezoelectric element according to claim 8, 9 or 11,

wherein a portion of said piezoelectric film, which was formed on the bottom electrode that was left by said patterning, has a 100 plane orientation degree of no less than 70%.

14. An ink-jet recording head, comprising:

the piezoelectric elements described in claim 8, 9 or 11;

pressure chambers whose internal volume is changed by mechanical displacement of said piezoelectric elements; and

ejection openings linked to said pressure chambers and ejecting ink droplets.

15. An ink-jet printer comprising the ink-jet recording head described in claim 14 in a printing mechanism.